



Our File No. 09799940-0120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Thinghao F. Wang

Serial No. 10/071,809

Filing Date: February 7, 2002

For METHOD FOR SELECTIVELY
ETCHING SILICON AND/OR
METAL SILICIDE

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Examiner: Deo, Duy Vu

Group Art Unit No.: 1765

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OCT 24 2003
TC 1700

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir,

I, Krishnaswamy Ramkumar ("I" or "Affiant") hereby declare as follows:

1. I am **not** the inventor of the subject matter of the above identified application.
2. I am presently an employee of the sole assignee of the above identified application, Cypress Semiconductor, Inc., and have been since 1993.
3. From about the end of 1993 through the middle of 1994, I participated in the production of semiconductor devices, including the plasma etching of substrates. After the middle of 1994, I continued to be informed about plasma etching through regular discussions with people at Cypress Semiconductor, Inc. who participated in the production of semiconductor devices, including the plasma etching of substrates.
4. My resume is attached as Exhibit A.

5. I have read the above identified application, including the presently active claims. I have also reviewed the references cited is the Office Action of May 16, 2003: Bourassa, et al., Tabara, et al., Tsai, and Langley, et al. I have also review the related document, Nojiri, et al., J. Vac. Sci. Technol. B14(3), May/June 1996, p. 1791-1795.

6. In an example in the above identified application (in the paragraph bridging pages 7 and 8), an etch was performed using a LAM9400 high density plasma reactor (available from LAM Research of Fremont, CA). Prior to etching an WSi_x layer on a polysilicon layer, a brief (approximately 5 second) breakthrough etch using CF_4 was performed. Then, a Cl_2/O_2 etch was performed at a pressure of approximately 3 miliTorr, a source power of approximately 400 W, a bias power of approximately 50 W, with a flow rate of Cl_2 of approximately 45 sccm and O_2 fo approximately 30 sccm, for approximately 30 seconds. Under these conditions, a WSi_x etch rate of approximately 1639 angstroms/min. was observed. The WSi_x layer (approximately 1000 angstroms thick) was completely etched, while the underlying polysilicon layer was not etched to an observable degree.

7. This data provided in the specification of the above identified application demonstrate substantially improved results, and these results are unexpected in light of the prior art (specifically Bourassa, et al., Tabara, et al., Tsai, Langley, et al., and Nojiri, et al., J. Vac. Sci. Technol. B14(3), May/June 1996, p. 1791-1795.). Furthermore, these result are commercially significant, since improved etch selectivity will result in a higher yield of devices, or a significant improvement in the ease of fabrication of devices. Finally, these results are commensurate in scope with the claims, since the data provided would lead one of skill in the art to conclude that the results obtained from the specific example would be expected for all etching which falls within the scope of the present claims.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Krishnaswamy Ramkumar

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